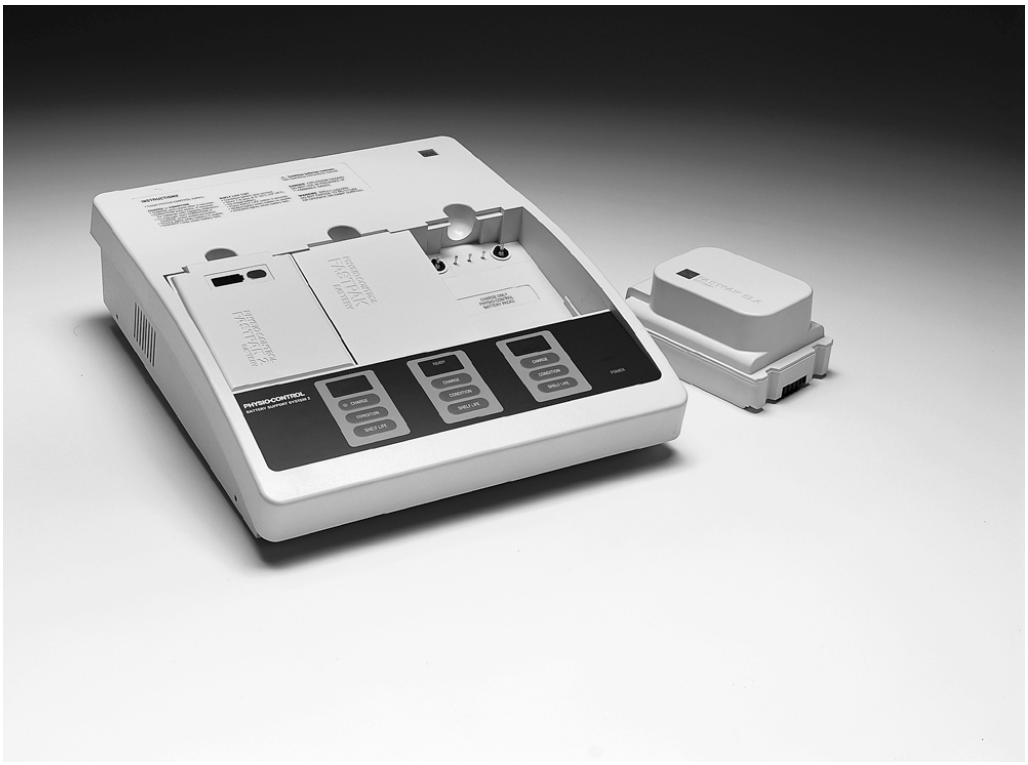
OPERATING INSTRUCTIONS

Medtronic
PHYSIO-CONTROL

BATTERY SUPPORT SYSTEM 2



Medtronic
PHYSIO-CONTROL

OPERATING INSTRUCTIONS

BATTERY SUPPORT SYSTEM 2

IMPORTANT

Federal (USA) law restricts this device to sale by or on the order of a physician.

This instrument is to be used by authorized personnel only.

Device Tracking

(USA only, including US government-owned units) The Food and Drug Administration requires defibrillator manufacturers and distributors to track the location of their defibrillators. If your defibrillator has been sold, donated, lost, stolen, exported, or destroyed or if it was not obtained directly from Medtronic Physio-Control Corp., please notify Physio at 1.800.442.1142, extension 4530.

Responsibility for Information

It is the responsibility of our customers to ensure that the appropriate person(s) within their organization have access to this information, including general safety information provided in Section 1.

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P/N 3010515-001

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CE

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Medtronic PHYSIO-CONTROL

Manufacturer's Name: **Medtronic Physio-Control Corp.**

Manufacturer's Address: **11811 Willows Road NE**
P.O. Box 97006
Redmond, WA 98073-9706
USA

declares that the CE-marked product

Product Name: **Battery Support System 2**

Model Number(s): **3010035**

complies with 93/42/EEC (Medical Device Directive) class I, conformity assessed per Annex 7.

This product complies with:

Safety:	EN 61010 PT1 1993 amd. 1995	– Class I – Pollution degree 2 – Installation Category II
EMC:	EN 55011: 1991 amd. 1997 *Susceptibility (CISPR 11)*	– Group 1, Class B
	EN 61000 PT4-2: 1995 *ESD*	– 6 kV CD, 8 kV AD
	EN 61000 PT4-3: 1996 *Radiated Immunity*	– 3 V/m
	EN 61000 PT4-4: 1996 Transient/Burst	– 0.5 kV Signal lines – 1 kV Power lines

Redmond, February 14, 1998

Michael D. Willingham
Vice President of Quality and Regulatory Affairs

European Contact: Your local Medtronic Physio-Control Sales and Service Office or
Leamington Court, Andover Rd, Newfound, Basingstoke, Hampshire RG23 7HE UK.

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SAFETY INFORMATION

This section provides important information to help you safely operate the PHYSIO-CONTROL® Battery Support System 2. Familiarize yourself with all of these terms, warnings, and symbols.

Terms	page 1-2
General Warnings and Cautions	1-2
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TERMS

The following terms are used either in these operating instructions or on the Battery Support System 2 (BSS 2):

Danger: Immediate hazards that will result in serious personal injury or death.
Warning: Hazards or unsafe practices that could result in serious personal injury or death.
Caution: Hazards or unsafe practices that could result in minor personal injury, product damage, or property damage.

GENERAL WARNINGS AND CAUTIONS

The following are general warning and caution statements. Other specific warnings and cautions are provided as needed in other sections of these operating instructions.

WARNINGS!

Shock or fire hazard.

Do not immerse any portion of this device in water or other fluids. Avoid spilling any fluids on the device or accessories. Do not clean with alcohol, ketones, or other flammable agents. Do not autoclave or sterilize this device unless otherwise specified.

Possible fire or explosion.

Do not use this device in the presence of flammable gases or anesthetics. Place the BSS 2 in the proper location as specified in these operating instructions.

Possible fire or explosion.

The BSS 2 is designed to be used with Physio-Control batteries only. Other manufacturers' batteries may overheat in this battery support system. Do not use with remanufactured or alternate source batteries.

Possible loss of power during patient care.

Physio-Control has no information regarding the performance or effectiveness of its LIFEPAK® defibrillator/monitors if they are used with other manufacturers' batteries or battery chargers. Using other manufacturers' batteries or battery chargers may result in device failure and may void warranty. Use only Physio-Control batteries and the appropriate PHYSIO-CONTROL Battery Support System.

CAUTIONS!

Possible equipment damage.

This device may be damaged by mechanical or physical abuse such as immersion in water or dropping. If the device has been abused, remove it from use and contact a qualified service technician.

Possible or potential inaccurate battery charge level indicator.

Using the PHYSIO-CONTROL® Battery Support System (P/N 801807) or the two-well Battery Charger (P/Ns 9-00284, 9-00288, and 801530) to charge and maintain a FASTPAK® 2 battery will eventually result in an inaccurate battery charge level indicator. Use only the BSS 2 (P/N 3010035) to charge and maintain FASTPAK 2 batteries.

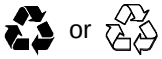
Possible equipment damage.

The supplied power cord is used to connect the battery support system to ac line voltage. Excessive voltage may cause fuses in the BSS 2 to blow. Before connecting the battery support system, ensure that you are using a grounded outlet of the correct voltage.

Note: The BSS 2 has no ON/OFF switch. When connecting the BSS 2 to ac line voltage, make sure that the power cord is easily accessible and is not obstructed in any way. In case of device malfunction or overheating, disconnect the device from the ac line voltage by removing the power cord.

SYMBOLS AND ABBREVIATIONS

The symbols and abbreviations below may be found in these operating instructions, on the BSS 2, or on FASTPAK and LIFEPAK batteries:

	Attention, consult accompanying documents
	Recycle NiCd battery
	Recycle PB battery
	Recycle this product
	Rechargeable battery: recycle battery
	Direct Current (DC)
	Alternating Current (AC)
+	Positive terminal
−	Negative terminal
	Fuse
	Type B, isolation (no patient connection)
	Indoor use only
LOT **YYWW**	Manufacturing date (batteries)
YYYY	Manufacturing date (BSS 2)
NRTL/C	Canadian Standards Association certification for United States (Nationally Recognized Test Laboratory) and Canada
CE	Marking of conformity according to the Medical Device Directive 93/42/EEC
Hz	Hertz (frequency)
V	Volts
A	Amps
W	Watts

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T	Slow Blow fuse
LED	Light Emitting Diode
NiCd	Nickel Cadmium chemistry battery
P/N	Part Number
S/N	Serial Number
SLA	Sealed Lead Acid chemistry battery

DOCUMENT CONVENTIONS

Text references to device buttons and labels are indicated in capital letters, for example: CHARGE.

BASIC ORIENTATION

This section provides a basic orientation to the PHYSIO-CONTROL® Battery Support System 2.

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Unpacking and Inspecting	2-3
Controls, Indicators, and Connectors	2-3
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PHYSIO-CONTROL BATTERY SUPPORT SYSTEM 2

The PHYSIO-CONTROL Battery Support System 2 (BSS 2) provides charging, conditioning, and shelf life testing for the Physio-Control FASTPAK and LIFEPAK batteries.

The BSS 2:

- Provides a clear indication that a battery is charging, ready for use, or needs to be discarded.
- Can charge, condition, or shelf life test up to three FASTPAK and LIFEPAK SLA batteries at one time.
- Is provided with a detachable power cord that connects to a grounded ac outlet.
- Has a wall mount bracket (optional) that permits horizontal or vertical mounting.

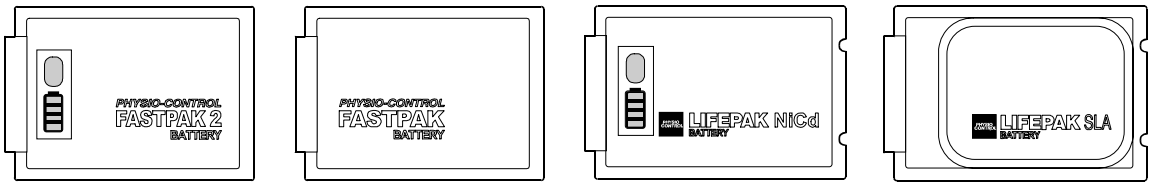
THE FASTPAK AND LIFEPAK FAMILY OF BATTERIES

WARNING!

Possible explosion.

Attempting to charge a LIFEPAK 5 battery in the BSS 2 may cause the battery to explode. Do not charge LIFEPAK 5 batteries in the BSS 2.

All the batteries shown in Figure 2-1 can be used in the LIFEPAK® 12 defibrillator/monitor series, but only the FASTPAK batteries can be used in other LIFEPAK defibrillator/monitors. The LIFEPAK batteries can only be used in the LIFEPAK 12 defibrillator/monitor.



FASTPAK 2 battery
P/N 3009375

FASTPAK battery
P/N 9-10424-19 (gold)
P/N 9-10424-18 (white)

LIFEPAK NiCd battery
P/N 3009376

LIFEPAK SLA battery
P/N 3009378

Figure 2-1 Physio-Control FASTPAK and LIFEPAK batteries

FASTPAK, FASTPAK 2, and LIFEPAK NiCd batteries have a nickel cadmium (NiCd) chemistry and LIFEPAK SLA batteries have a sealed lead acid (SLA) chemistry. In addition, the FASTPAK 2 and LIFEPAK NiCd batteries have a charge level indicator (fuel gauge).

Charge FASTPAK batteries in either the Battery Support System (BSS) (P/N 801807), the BSS 2 (P/N 3010035), or the LIFEPAK 12 defibrillator when it is powered by the AC or DC Power Adapter. FASTPAK batteries **require** periodic conditioning and shelf life testing to optimize performance. Condition and shelf life test FASTPAK batteries in the BSS or BSS 2.

Charge the FASTPAK 2 battery in the BSS 2 or in the LIFEPAK 12 defibrillator when it is powered by the AC or DC Power Adapter. Using the BSS (P/N 801807) or the two-well Battery Charger (P/Ns 9-00284, 9-00288, and 801530) to charge and maintain a FASTPAK 2 battery will eventually result in an inaccurate battery charge level indicator. FASTPAK 2 batteries **require** periodic conditioning and shelf life testing to optimize performance. Condition and shelf life test FASTPAK 2 batteries only in the BSS 2.

Charge LIFEPAK NiCd and SLA batteries either in the BSS 2 or in the LIFEPAK 12 defibrillator when it is powered by the AC or DC Power Adapter. LIFEPAK NiCd batteries **require** periodic conditioning and shelf life testing to optimize performance. Periodic conditioning and shelf life testing may optimize SLA battery performance. Condition and shelf life test LIFEPAK NiCd and SLA batteries in the BSS 2.

UNPACKING AND INSPECTING

Remove the BSS 2, ac power cord, and product literature from the shipping container. Carefully inspect the BSS 2 and the power cord for any signs of damage during shipping. Verify the receipt of everything noted in the packing list. Save the shipping container and the foam inserts in case the BSS 2 needs to be returned.

CONTROLS, INDICATORS, AND CONNECTORS

Figure 2-2, Figure 2-3, and Table 2-1 provide an overview of the controls, indicators, and connectors for the BSS 2 and FASTPAK 2 batteries.

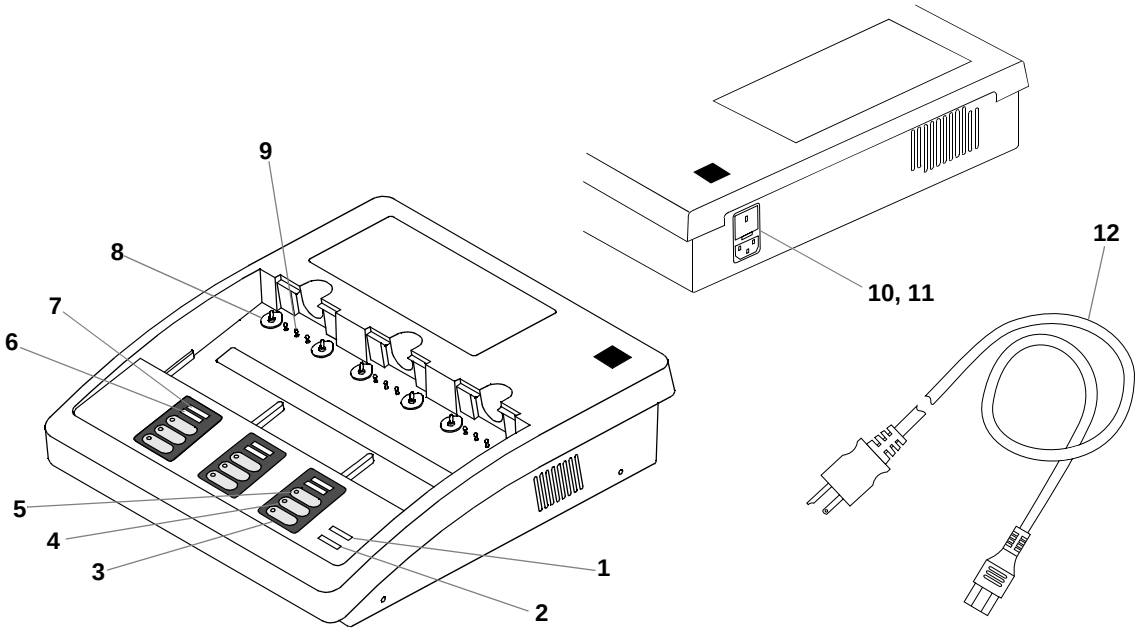


Figure 2-2 Controls, indicators, and connectors

Table 2-1 Controls, indicators, and connectors

1	SERVICE	Indicates BSS 2 needs service.
2	POWER	Indicates power is on.
3	SHELF LIFE	Amber LED indicates battery is undergoing a shelf life test.
4	CONDITION	Amber LED indicates battery is conditioning.
5	CHARGE	Amber LED indicates battery is charging.
6	DISCARD	Indicates battery should be removed from use and discarded/ recycled.
7	READY	Indicates battery is ready for use.
8	+ /– Terminals	Transfer charge current onto battery.

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9	Communication Pins	Provide digital communication between the BSS 2 and the battery.
10	AC Power Input Receptacle	Receptacle for ac power cord.
11	Fuses	Two fuses help protect the BSS 2 from current surges.
12	Power Cord	Cable for operation from an ac outlet.

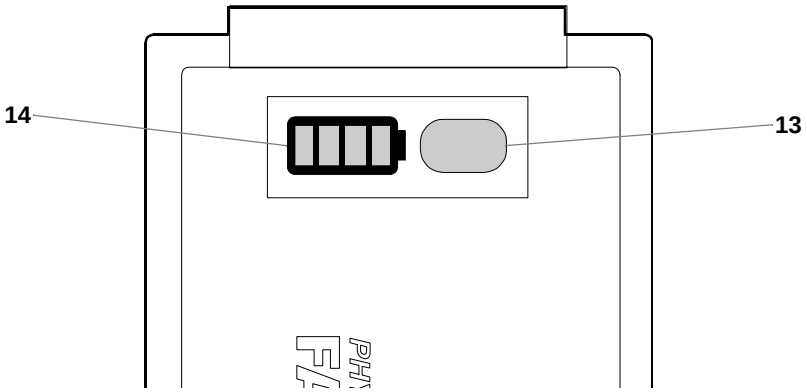

Figure 2-3 Battery fuel gauge

13	Fuel Gauge Button		Lights the fuel gauge indicators.
14	Fuel Gauge Indicators	●●●● ●●●○ ●●○○ ●○○○	One to four lights indicate the relative charge of the battery, with four lights indicating maximum charge.
		☼○○○	One light flashing: charge battery.
		☼○☼○	Two alternately flashing lights: battery requires conditioning.
		○○○○	No lights: battery has 0% charge or needs to be discarded.

INSERTING BATTERIES

CAUTION!

Failure to charge batteries.

Battery pins in the battery support system may be damaged if the batteries are dropped or forced into the battery wells. Inspect the battery pins routinely for signs of damage.

Routinely inspect batteries for damage or leakage. Discard/recycle damaged or leaking batteries. To insert a battery into a battery well:

1. Inspect the **+/-** terminals (pins) in the battery well for signs of damage.
2. Inspect the battery well for signs of damage or distortion.
3. Align the battery so that the battery clip is over the pins in the battery well.
4. Insert the end of the battery opposite the battery clip into the battery well.
5. Firmly press the other end into the battery well until it clicks into place.

To remove the battery, press the battery clip in and lift the battery out of the battery well.

BATTERY MAINTENANCE

This section describes how to use the PHYSIO-CONTROL Battery Support System 2 to maintain FASTPAK and LIFEPAK batteries.

Battery Maintenance Warning	page 3-2
Battery Maintenance Guidelines and Procedures	3-2
Receiving New Batteries	3-4
Storing Batteries	3-4
Discarding/Recycling Batteries	3-4

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BATTERY MAINTENANCE WARNING

WARNING!

Possible loss of power and delay of therapy during patient care.

Using an improperly maintained battery to power the defibrillator may cause power failure without warning. Use the appropriate PHYSIO-CONTROL Battery Support System to charge and condition batteries.

BATTERY MAINTENANCE GUIDELINES AND PROCEDURES

To maximize BSS 2 operation and battery performance and life, observe these guidelines:

- Place the BSS 2 in the proper location
- Charge batteries at room temperature
- Rotate batteries
- Condition batteries every three months
- Perform shelf life tests every six months (optional for LIFEPAK SLA)

Place the BSS 2 in the Proper Location

To help ensure proper BSS 2 functioning:

- Place in a dry, well-ventilated area
- Keep at room temperature
- Keep batteries in wells
- Do not place in direct sunlight
- Do not place near a heat source or an air conditioner
- Keep fan vent on back panel unobstructed

Charge Batteries at Room Temperature

Charging batteries at room temperature, 20°C to 25°C (68°F to 78°F), is preferred to maximize battery performance and life. The extreme temperature range for charging batteries is 5°C to 35°C (41°F to 95°F). Batteries charged outside this temperature range may not reach a full charge (even if charging time is increased) and irreversible cell damage could occur.

CAUTION!

Possible battery damage.

Charging a battery at temperatures below 5°C (41°F) or above 35°C (95°F) prevents the battery from reaching full capacity and may cause irreversible cell damage.

Fully charge SLA batteries between uses. If SLA batteries are not 100% recharged between uses, sulfation (lead sulfate buildup on electrode surfaces inside the battery) can occur. Sulfation reduces battery capacity and may result in premature battery failure.

To charge a battery:

1. Insert a battery into a BSS 2 battery well. CHARGE LED lights and charging begins automatically.
2. READY lights when a battery reaches full charge. The battery may remain in the battery well until needed. The BSS 2 supplies a trickle charge that prevents overcharging and maintains the battery at peak capacity.

   Note: CONDITION LED lights and the conditioning procedure begins automatically if a FASTPAK 2, LIFEPAK NiCd, or LIFEPAK SLA battery requires conditioning.

   Note: Withdrawal of the battery from the charger prior to a READY indication may result in inadequate charge.

   Note: If DISCARD lights, remove the battery from use and discard/recycle (see page 3-4).

Rotate Batteries

Rotate all batteries in active use so that they are used with equal frequency.

Condition Batteries Every Three Months

Voltage depression is a condition that reduces battery performance. When NiCd batteries repeatedly receive a shallow discharge (that is, not allowed to drain completely between charging cycles), voltage depression occurs. This condition is often mistakenly called "memory." Voltage depression can usually be reversed by conditioning the battery every three months.

Conditioning is a series of charge/deep discharge cycles performed in the BSS 2 to measure and optimize battery capacity.

To condition a battery:

1. Insert the battery into any battery well. CONDITION LED lights automatically when a FASTPAK 2, LIFEPAK NiCd, or LIFEPAK SLA battery requires conditioning. Allow the FASTPAK 2 or LIFEPAK batteries to complete the condition cycle.
2. Press CONDITION for other FASTPAK batteries.
3. READY lights when a battery is fully recharged. The BSS 2 automatically recharges a battery that passes the conditioning process.

Note: If DISCARD lights, remove the battery from use and discard/recycle.

Note: If a power failure occurs during battery conditioning, the BSS 2 interrupts conditioning and reverts to CHARGE mode once power is restored. Battery conditioning may not have been completed. Repeat conditioning process.

Perform Shelf Life Testing Every Six Months

Batteries self-discharge when not in use. A new NiCd battery self-discharges approximately 10% of its capacity in the first day and 1% of its capacity every day thereafter when stored at room temperature. In 10 days, a new NiCd battery loses approximately 20% of its capacity.

SLA batteries have a low self-discharge rate. A new SLA battery self-discharges approximately 0.1% of its capacity each day when stored at room temperature. In 10 days, a new SLA battery loses approximately 1.0% of its capacity.

The actual rate of battery self-discharge depends on:

- Battery age
- Temperature
- Frequency of use
- Length of time in storage
- Physical condition

These factors can combine to significantly increase the battery discharge rate. For example, an older NiCd battery stored at higher temperatures may have an accelerated self-discharge rate much greater than 1% a day.

The self-discharge rate increases as the battery ages.

The shelf life test evaluates the self-discharge rate of a battery. Any battery that fails the shelf life test (DISCARD lights) should be removed from use and discarded/recycled.

To perform a shelf life test:

1. Complete the conditioning procedure.
2. Remove the battery from the BSS 2 and store for 7 days at room temperature.
3. After storage, insert the battery into a battery well and press SHELF LIFE within 3 seconds.
4. Verify that SHELF LIFE LED lights.

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5 READY lights when the battery passes the shelf life test and is fully recharged. The battery may then be returned to use.

Note: If DISCARD lights, remove the battery from use and discard/recycle.

Note: If a power failure occurs during shelf life test, the BSS 2 interrupts the shelf life test and reverts to CHARGE mode once power is restored. Shelf life test may not have been completed. Repeat the shelf life test.

RECEIVING NEW BATTERIES

When newly-purchased batteries are received, charge each new battery. Because batteries self-discharge during storage, a new battery may not be fully charged when it is received.

STORING BATTERIES

WARNING!

Possible loss of power during patient care.

Stored batteries lose charge. Failure to charge a stored battery before use may cause device power failure without warning. Always charge a stored battery before placing it in active use.

Store batteries in or out of the BSS 2 except when performing the shelf life test. During storage, batteries still require routine maintenance (refer to the conditioning procedure, page 3-3, and the shelf life test, page 3-3).

Storing an SLA battery that is less than 100% charged can result in permanent damage.

When storing batteries:

- Fully charge LIFEPAK SLA batteries before storing.
- Store batteries between 4.4°C and 26.7°C (40°F to 80°F). Lower temperatures reduce the battery self-discharge rate. Higher temperatures increase the self-discharge rate.
- Do not freeze batteries. Damage to the battery may result.
- Charge stored batteries before placing in use.

DISCARDING/RECYCLING BATTERIES

Properly maintained FASTPAK batteries have a useful life of approximately two years. Properly maintained FASTPAK 2 and LIFEPAK NiCd batteries have a useful life up to five years. Properly maintained LIFEPAK SLA batteries have a useful life of up to three years. A FASTPAK, FASTPAK 2, LIFEPAK NiCd, or LIFEPAK SLA battery has reached the end of useful life if *one or more* of the following circumstances occur:

- Battery fails conditioning or shelf life test.
- There is physical damage to the battery case.
- The battery is leaking.
- The BSS 2 indicates DISCARD during any battery maintenance procedure.

Note: The FASTPAK 2, LIFEPAK NiCd, and LIFEPAK SLA batteries have internal parameters that establish limits for useful life. If these parameters are exceeded, the BSS 2 will indicate DISCARD when battery is inserted into the battery well.

To promote awareness of battery recycling, Physio-Control FASTPAK and LIFEPAK batteries are marked with one of these symbols:

When a FASTPAK or LIFEPAK battery reaches the end of its useful life, recycle the battery as follows:

Battery Recycling in the USA

Recycle batteries by participating with Medtronic Physio-Control in a national battery recycling program. Contact your local Physio representative to obtain shipping instructions and shipping containers. Do not return your batteries to the Medtronic Physio-Control offices in Redmond, Washington, unless instructed to do so by your Physio representative.

Battery Recycling Outside the USA

Recycle batteries according to national and local regulations. Contact your local Physio representative for assistance.

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BSS 2 MAINTENANCE

This section describes the PHYSIO-CONTROL Battery Support System 2 maintenance.

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Troubleshooting	4-3
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Specifications	4-4
Warranty Policy	4-6
Product Recycling Information	4-6

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THE BSS 2 SERVICE INDICATOR

WARNING!

Shock hazard.

Do not disassemble the battery support system. It contains no operator-serviceable components and dangerous high voltages may be present. Contact a qualified service technician for repair.

When the BSS 2 ac power cord is inserted into an ac power receptacle, the BSS 2 performs a series of self-diagnostic tests. Power-up testing is indicated by all the BSS 2 indicator lights briefly illuminating. If self-testing is successful all the indicators (except POWER) extinguish. If the BSS 2 fails any power-up self-test, SERVICE lights. Remove the BSS 2 from use and contact a qualified service technician for repair.

Periodically inspect the BSS 2 for damage or cracks. Check that it is completely closed. Inspect the power cord for damage, cracks, or bent pins.

The BSS 2 does not contain any operator-serviceable components. If the BSS 2 requires service, contact a qualified service technician. When calling Medtronic Physio-Control to request service, have the following information available: model number, serial number, and a description of the problem. If the device must be sent to a service center or factory, repack it in the original shipping container to prevent shipping damage.

Test modes, service protocols, fault codes, and other maintenance procedures are described in the Battery Support System 2 Service Manual. In the USA, call 1.800.442.1142 for technical consultation, manuals, or parts. Outside the USA, contact your local Medtronic Physio-Control service office.

CLEANING

Clean the BSS 2 case, battery contacts, batteries, and ac power cord with a damp sponge or towel. The following agents may be used:

- Mild soap and water
- Quaternary ammonium compounds
- Isopropyl alcohol
- Peracetic (peroxide) acid solutions

CAUTION!

Possible equipment damage.

Do not clean any part of the battery support system or ac power cord with bleach, bleach dilution, ketones, solvents, flammable agents, phenolic compounds, or abrasive agents. Do not steam, autoclave, or gas-sterilize the battery support system.

FUSE REPLACEMENT

The BSS 2 has two fuses that help provide protection against over current. To replace the fuses, open the fuse carrier door (located in the power input module) with a flat-bladed screw driver. Verify that the replacement fuses are the same type and rating as listed in the specifications in Table 4-3.

When replacing fuses in the BSS 2, use only 5 x 20mm T 250V fuses approved to IEC 127-2, sheet 1 or 2, such as:

- Schurter FST
- Bussman GDC
- Littelfuse 218

Note: Use of other fuses may cause premature failure of mains fuse.

TROUBLESHOOTING

Refer to the troubleshooting tips in Table 4-1. If these troubleshooting tips do not resolve your question, remove the BSS 2 from active use and contact a qualified service technician for service and repair. To contact Medtronic Physio-Control in the USA, call 1.800.442.1142. Outside the USA, contact your local Medtronic Physio-Control sales or service office.

Table 4-1 Troubleshooting tips for the BSS 2

Observation	Possible Cause	Corrective Action
POWER does not light when the ac power cord is inserted into an ac power receptacle.	Power cord not properly connected.	Make sure that the power cord is securely connected at both ends.
	Blown fuses.	Replace fuses using the procedure described on page 4-2 with the type of fuses specified in Table 4-3.
	Inoperative ac outlet or tripped circuit breaker in building.	Remove from use and contact a qualified service technician.
CHARGE/CONDITION does not light when a FASTPAK battery is installed.	Battery malfunction.	Install a different battery in the same battery well. If CHARGE/CONDITION lights, discard the original battery.
	BSS 2 malfunction.	Remove from use and contact a qualified service technician.
READY does not light after hours of charging.	Battery does not charge to full capacity (battery requires conditioning).	Perform the conditioning procedure (page 3-3).
	Battery charged at excessively high or low temperatures.	Perform the conditioning procedure (page 3-3) at the correct temperature.
DISCARD illuminates.	Battery is at end of useful life.	Remove from use and discard/recycle.
Battery powers devices for less than the expected time.	Battery needs conditioning.	Perform the conditioning procedure (page 3-3). If the battery is still not performing to expectations, perform a shelf life test (page 3-3).
SHELF LIFE LED does not light.	Conditioned battery was not removed and stored prior to shelf life test.	Condition, remove, and store battery for 7 days prior to shelf life testing.

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REPLACEMENT PARTS AND ACCESSORIES

In the USA, call 1.800.442.1142 to order parts and accessories. Outside the USA, contact your local Medtronic Physio-Control sales or service office.

Table 4-2 Replacement Parts and Accessories

Description	Part Number
Battery Support System 2 Operating Instructions	3010515
Battery Support System 2 Service Manual	3011409
FASTPAK 2 Battery	3009375
FASTPAK Battery (white)	9-10424-18
FASTPAK Battery (gold)	9-10424-19
LIFEPAK NiCd Battery	3009376
LIFEPAK SLA Battery	3009378
AC Input Power Cord	803650
BSS 2 Wall Mount Bracket	3010932

SPECIFICATIONS

Table 4-3 lists the specifications for the Battery Support System 2.

Table 4-3 BSS 2 specifications*

Function	Description
General Specifications:	
Dimensions	31.5 cm x 37.6 cm x 9.7 cm (12.4 inches x 14.8 inches x 3.8 inches)
Weight	8.2 kg (< 18 pounds) (excluding batteries)
Number of battery wells	3. Charging, conditioning, and shelf life test capability in all battery wells.
Power requirements:	100/120/220/240 ± 10%, 50/60 Hz ± 3 Hz
Military	108 - 118 Vac, 400 ± 7Hz
Fuses	Two fuses in the power input module (5 x 20 mm T 250V, Low or High break capacity) per IEC 127-2, sheet 1 or 2, such as Bussman GDC, Littelfuse 218, or Schurter FST. 100/120 Volt Input: 1.6 Amp (T, or Time-Lag) 220/240 Volt Input: 0.8 Amp (T, or Time-Lag)
Environmental Specifications:	
Liquid Ingress	IPX0 per IEC529. Not protected against ingression of fluids. Indoor use only.
Altitude, operating	To 5,468m (15,000 feet)
Altitude, non-operating	To 6,578m (18,045 feet)
Humidity	0 to 95%
Temperature, operating	+5° to 45°C (+41° to 113°F) (commercial) 0° to 50°C (+32° to 122°F) (U.S. military)
Temperature, storage	-40° to +70°C (-40° to 158°F) (commercial) -46° to +71°C (-51° to 160°F) (U.S. military)
Vibration	IEC 68-2-6 (commercial) MIL-STD-810E, Method 514.4 Category 4, 6, 8 (U.S.military)

*All specifications are at 20°C unless otherwise stated.

Table 4-4 FASTPAK and LIFEPAK Battery Specifications*

FASTPAK and FASTPAK 2	
Battery Type	Nickel cadmium
Weight	0.7 kg (1.5 lbs)
Voltage	12Vdc
Capacity	1.2 amp hours
Charge Time (with fully depleted battery)	1.5 hours
Conditioning Time	7 hours typical, 8 hours maximum
Charging Temperature Range	+5° to 35°C (41° to 95°F)
Operating Temperature Range	0° to 50°C (32° to 122°F)
Long Term (>1 day) Storage Temperature Range	0° to 35°C (32° to 95°F)
LIFEPAK NiCd	
Battery Type	Nickel cadmium
Weight	0.77 kg (1.7 lbs)
Voltage	12Vdc
Capacity	1.7 amp hours
Charge Time (fully depleted battery)	2.25 hours
Conditioning Time	8 hours typical, 10 hours maximum
Charging Temperature Range	+5° to 35°C (41° to 95°F)
Operating Temperature Range	0° to 50°C (32° to 122°F)
Long Term (>1 day) Storage Temperature Range	0° to 35°C (32° to 95°F)
LIFEPAK SLA	
Battery Type	Sealed lead acid
Weight	1.4 kg (3.0 lbs)
Voltage	12Vdc
Capacity	2.5 amp hours
Charge Time (fully depleted battery)	6 hours typical, 12 hours maximum
Conditioning Time	28 hours typical, 56 hours maximum
Charging Temperature Range	+5° to 35°C (41° to 95°F)

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Operating Temperature Range	0° to 50°C (32° to 122°F)
Long Term (>1 day) Storage Temperature Range	0° to 35°C (32° to 95°F)

*All specifications are at 20°C unless otherwise stated.

WARRANTY POLICY

The BSS 2 is warranted against all defects in materials and workmanship for a period of one year from the date of delivery.

All batteries supplied by Medtronic Physio-Control for LIFEPAK defibrillator/monitor products are warranted for a period of one year. If Physio receives notice of a battery defect during the warranty period, Physio will replace the battery upon verification of the defect.

Use of other manufacturers' batteries and accessories with Medtronic Physio-Control defibrillator/monitor products may void Safety Agency Certifications and warranty.

PRODUCT RECYCLING INFORMATION

Recycle the device at the end of its useful life.

Recycling Assistance

The device should be recycled according to national and local regulations. Contact your local Physio representative for assistance.

Preparation

The device should be clean and contaminant-free prior to being recycled.

Recycling of Disposable Electrodes

After using disposable electrodes, follow your local clinical procedures for recycling.

Packaging

Packaging should be recycled according to national and local regulations.

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